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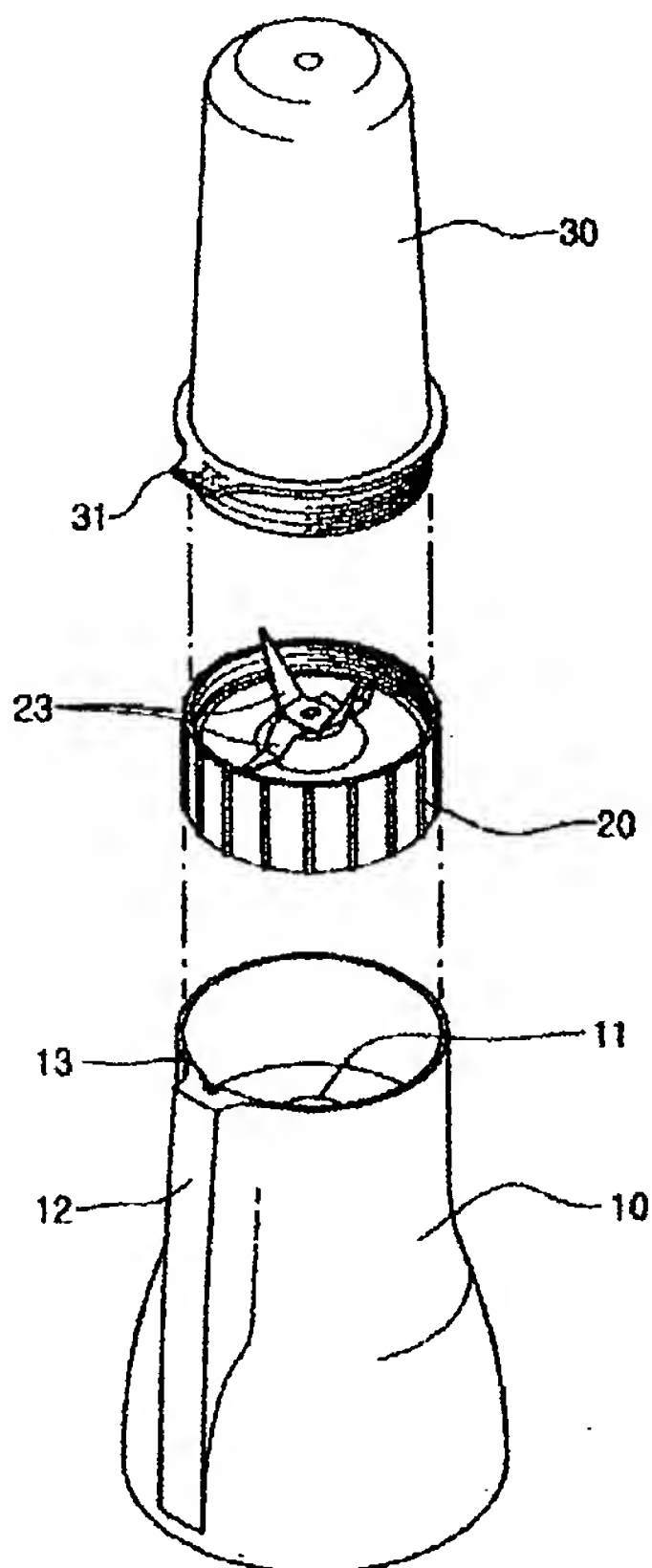
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- (71) Applicant (for US only): **CORRUPAD KOREA CO., LTD** [KR/KR]; 46-1, Bongmyeong-ri, Namsa-myeon, Yongin-si, Kyonggi-do 449-880 (KR).
- (74) Agent: **KIM, Won-Shik**; Suite 201, Yuyang B/D, 823-11 Yeoksam-dong, Kangnam-Gu, Seoul 135-080 (KR).
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- (72) Inventor; and  
(75) Inventor/Applicant (for US only): **JEONG, Gang-Hoon**

(54) Title: **MIXER**



(57) Abstract: The object of this invention is to provide a mixer which has a main body (10) having a motor, and a drive clutch (11) provided at a center of a top of the main body. An attachment cap (20) is seated in the top of the main body, with a driven clutch (21) provided at a center of a bottom of the attachment cap to engage with the drive clutch (11). A blade (23), used for grinding or mixing food, is mounted to an upper end of a rotating shaft extending upward from the driven clutch, while a heat-shielding plate (22) is mounted to the bottom of the attachment cap so as to distribute heat of the drive clutch to the surroundings. A measuring cap (30) engages with the attachment cap, with a locking structure provided at the measuring cap to lock the measuring cap to the main body.

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## MIXER

### Technical Field

The present invention relates, in general, to mixers which are kitchen utensils and, more particularly, to a mixer, which allows a user to use the mixer in  
5 a grinder-mode or a mixer-mode, as desired, thus being convenient to the user, and which effectively and evenly distributes heat from its drive unit to the surroundings while preventing the distributed heat from being transferred to food during an operation thereof, and prevents damage to the drive unit due to infiltration of moisture to the drive unit during the operation, thus enhancing its  
10 operational safety, reliability and durability, and which has an elastic driven clutch provided at a lower end of an attachment cap, thus minimizing friction between the driven clutch of the attachment cap and a drive clutch of a main body when the driven clutch is brought into engagement with the drive clutch.

### Background Art

15 Generally, grinders and mixers are kitchen utensils which are used for grinding, mixing, chopping, crushing, beating and blending (herein below, simply referred to as "grinding" and "mixing") food, and typically comprise a main body and a lid. The lid covers an open top of the main body to prevent food from splashing out of the main body when the food is ground and/or mixed. The lid  
20 may be also used as a container to contain the food therein after the food is completely ground and/or mixed. A bottom plate is placed in the open top of the main body at a position of a predetermined depth to hold the food thereon while grinding and/or mixing the food, with a shaft hole formed at a center of the bottom plate to hold a rotating shaft. A blade is mounted to an upper end of the  
25 rotating shaft to rotate along with the rotating shaft, thus grinding and/or mixing the food. A drive motor is connected to the rotating shaft so as to rotate the

rotating shaft.

5 The grinders are typically used for crushing or grinding fruits and vegetables to make juice, while the mixers are typically used for mixing crushed or ground fruits or mixing different kinds of foods to produce mixtures having desired tastes. Also, the grinders and mixers may be used for chopping, grating or crushing garlic or pepper, so that users are not necessary to manually chop, grate or crush the garlic or pepper. The grinders and mixers are thus preferably, simply and conveniently used by the users.

10 However, the conventional grinders and the conventional mixers are manufactured and marketed as separate machines, thus forcing the users to purchase the mixers and grinders, separately, while paying more for them. Furthermore, when it is desired to mix ground food with another food, it is necessary for a user to primarily grind the food by the use of a grinder, and, thereafter, mix the ground food with the other food by the use of a mixer. The  
15 conventional grinders and mixers are thus inconvenient to the users. In addition, the conventional grinders and mixers cannot effectively or evenly distribute heat from the drive units to the surroundings during operations, and it is easy for moisture and impurities to be introduced to the drive unit, thus damaging the drive unit and reducing the expected life span of the drive unit.

20 Disclosure of the Invention

Accordingly, the present invention has been made keeping in mind the above problems occurring in the conventional grinders and mixers, and an object of the present invention is to provide a mixer, which allows a user to use the mixer in a grinder-mode or a mixer-mode, as desired, thus being convenient to the  
25 user, and which evenly distributes heat to the surroundings and preventing the distributed heat from being transferred to the food during an operation thereof, and prevents damage to a drive unit thereof due to infiltration of moisture to the drive unit during the operation, thus enhancing its operational safety, reliability

and durability.

In order to accomplish the above object, the present invention provides a mixer, including: a main body having a drive unit to generate a rotating force, an electric circuit to control the drive unit, and a drive clutch provided at a center of a top of the main body while being connected to the drive unit so as to be rotated by the rotating force of the drive unit; an attachment cap seated in the top of the main body, with a driven clutch rotatably provided at a center of a bottom of the attachment cap and having a shape corresponding to the drive clutch so as to engage with the drive clutch, a blade used for grinding or mixing food and mounted to an upper end of a rotating shaft extending upward from the driven clutch, and a heat-shielding plate mounted to the bottom of the attachment cap such that the driven clutch exposed to an outside of the heat-shielding plate, thus distributing heat, generated from the drive clutch, to the surroundings; and a measuring cap engaging with the attachment cap through a screw-type engagement, with a locking structure provided at the measuring cap to lock the measuring cap to the main body so as to prevent the measuring cap from undesirably moving relative to the main body.

#### Brief Description of the Drawings

The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an exploded top perspective view of a mixer according to an embodiment of the present invention;

FIG. 2 is a top perspective view of the mixer of FIG. 1, with the elements of the mixer being completely assembled into a single body;

FIG. 3 is a partially broken top perspective view of a jar-shaped main body of the mixer of FIG. 1;

FIG. 4 is a bottom perspective view of an attachment cap used with the

mixer of FIG. 1; and

FIGS. 5a and 5b are top perspective views of an attachment cap with a grinding blade and another attachment cap with a mixing blade, respectively, which may be selectively used with the mixer of FIG. 1.

5     Best Mode for Carrying Out the Invention

Reference should now be made to the drawings, in which the same reference numerals are used throughout the different drawings to designate the same or similar components.

10     FIG. 1 is an exploded top perspective view of a mixer according to an embodiment of the present invention. FIG. 2 is a top perspective view of the mixer of FIG. 1, with the elements of the mixer being completely assembled into a single body. FIG. 3 is a partially broken top perspective view of a jar-shaped main body of the mixer of FIG. 1. As shown in the drawings, the mixer 50 of the present invention has a drive motor (not shown) which is stably installed at a  
15     predetermined position in a jar-shaped main body 10 of the mixer 50 by an appropriate mounting means.

20     The jar-shaped main body 10 has a smoothly curved, rounded and tapered appearance so as to meet the requirements of modern consumers preferring simple but elegant appearances for kitchen utensils to complex designs. The upper edge of the main body 10 extends upward to a predetermined height to form a cap-mounting well at a top of the main body 10, thus completely seating an attachment cap 20 in the cap-mounting well without exposing the attachment cap 20 to the outside when the elements of the mixer 50 are completely assembled into a single body. Since the attachment cap 20 is completely seated  
25     in the cap-mounting well of the main body 10 without being exposed to the outside, as described above, it is possible to effectively protect a drive unit of the mixer 50 from external impact or external impurities. A desired operational safety and reliability of the drive elements is thus secured.

A drive clutch 11 is provided at a center of a bottom of the cap mounting well which is provided at the top of the main body 10. The drive clutch 11 is connected to a drive shaft of the drive motor (not shown) used as the drive unit of the mixer 50, and has a plurality of first engaging teeth 11a. The outside edge of the drive clutch 11 extends upward to a predetermined height, thus forming a guard wall to receive moisture and impurities therein and thereby to prevent the moisture and impurities from negatively affecting the drive unit installed in the main body 10, during an operation of the mixer 50. The attachment cap 20 has a driven clutch 21 at a center of a bottom thereof, with a plurality of second engaging teeth 21a formed at the driven clutch 21 to engage with the first engaging teeth 11a of the drive clutch 11, when the attachment cap 20 is seated in the cap-mounting well of the main body 10.

That is, the attachment cap 20 which is detachably seated in the cap-mounting well of the main body 10, has the driven clutch 21 at the center of the bottom thereof, as shown in FIG. 4. The driven clutch 21 engages with the drive clutch 11 of the main body 10 such that the driven clutch 21 rotates along with the drive clutch 11. A rotating shaft (not shown) extends through a central axis of the attachment cap 20 from the driven clutch 21 to a center of a top surface of the attachment cap 20. A blade 23 capable of grinding and mixing food is mounted to an upper end of the rotating shaft.

In the attachment cap 20, the driven clutch 21 has the second engaging teeth 21a at its lower surface so as to closely engage with the first engaging teeth 11a of the drive clutch 11 when the attachment cap 20 is seated in the cap-mounting well of the main body 10. Therefore, the rotating force of the drive clutch 11 which is rotated by the drive motor of the main body 10, is reliably transmitted to the driven clutch 21 without failure, so that the drive and driven clutches 11 and 21 are rotated in the same direction during the operation of the mixer 50. In the present invention, the driven clutch 21 is preferably made of an elastic material, for example, synthetic rubber, so that the driven clutch 21 smoothly engages with the drive clutch 11 without causing interference between



the two clutches 11 and 21 when the two clutches 11 and 21 come into engagement with each other. Of course, it should be understood that the material of the driven clutch 21 is not limited to the above-described material.

5 A heat-shielding plate 22 is mounted to the bottom of the attachment cap 20, with the driven clutch 21 exposed outside the heat-shielding plate 22. The heat-shielding plate 22 thus evenly distributes heat, generated from the drive clutch 21, to the surroundings, while preventing the distributed heat from being undesirably transferred to the top surface of the attachment cap 20. In the present invention, the heat-shielding plate 22 is preferably produced by using an  
10 aluminum thin plate or a copper thin plate. Since the aluminum plate is not expensive, it is more preferable to produce the heat-shielding plate 22 by using the aluminum thin plate.

The mixer 50 of the present invention further has a measuring cap 30 which engages with the attachment cap 20 through a screw-type engagement and  
15 acts as a lid of the mixer 50. To prevent the measuring cap 30 from undesirably moving relative to the main body 10 during the operation of the mixer 50, the measuring cap 30 has a structure which allows the cap 30 to be locked to the main body 10 when the cap 30 is completely tightened to the attachment cap 20. That is, the measuring cap 30 has a flange around a lower portion thereof, with a  
20 locking protrusion 31 formed at a predetermined portion of the flange by extending outward from the flange in a radial direction. A vertical thick part 12 is provided at a predetermined portion of an outer surface of the main body 10, with a locking slot 13 horizontally formed at an upper end of the thick part 12. Therefore, when the measuring cap 30 is fully rotated in a predetermined  
25 direction to be tightened to the attachment cap 20 seated in the cap-mounting well of the main body 10, the locking protrusion 31 of the cap 30 is inserted into the locking slot 13 of the main body 10, thus locking the cap 30 to the main body 10. Of course, when the measuring cap 30 is rotated in an inverse direction, the locking protrusion 31 escapes from the locking slot 13, thus releasing the cap 30  
30 from the main body 10.

When the mixer 50 having the above-described construction is turned on, the drive motor used as the drive unit of the mixer is rotated to generate the rotating force, so that the drive clutch 11 of the main body 10 is rotated. In such a case, since the second engaging teeth 21a of the driven clutch 21 closely engage with the first engaging teeth 11a of the drive clutch 11, the rotating force of the drive clutch 11 is reliably transmitted to the driven clutch 21 without failure. The drive and driven clutches 11 and 21 are thus rotated in the same direction, so that the blade 23 mounted to the upper end of the rotating shaft of the driven clutch 21 is rotated to grind and mix the food, such as fruits or vegetables, contained in the attachment cap 20 and the measuring cap 30. The mixer 50 of the present invention may be provided with a variety of attachment caps 20 having different functional blades 23, thus allowing the user to selectively use a desired one of the attachment caps 20. For example, the mixer 50 may be provided with a grinding attachment cap 20, and a mixing attachment cap 20 of FIG. 5b.

#### Industrial Applicability

As described above, the present invention provides a mixer, which allows a user to use the mixer in a grinder-mode or a mixer-mode, as desired, by selectively using a desired one of different attachment caps, thus being convenient to the user. The mixer also has a heat-shielding plate at a main body thereof, thus evenly distributing heat to the surroundings while preventing the distributed heat from being transferred to the food during an operation thereof. Therefore, the mixer enhances its operational safety, reliability and durability. In the mixer, the drive clutch has an improved structure capable of preventing damage to a drive unit of the mixer due to infiltration of moisture to the drive unit during the operation, thus further enhancing the operational safety, reliability and durability of the mixer.

Although the preferred embodiments of the present invention have been



disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Claims

## 1. A mixer, comprising:

5 a main body having a drive unit to generate a rotating force, an electric circuit to control the drive unit, and a drive clutch provided at a center of a top of the main body while being connected to the drive unit so as to be rotated by the rotating force of the drive unit;

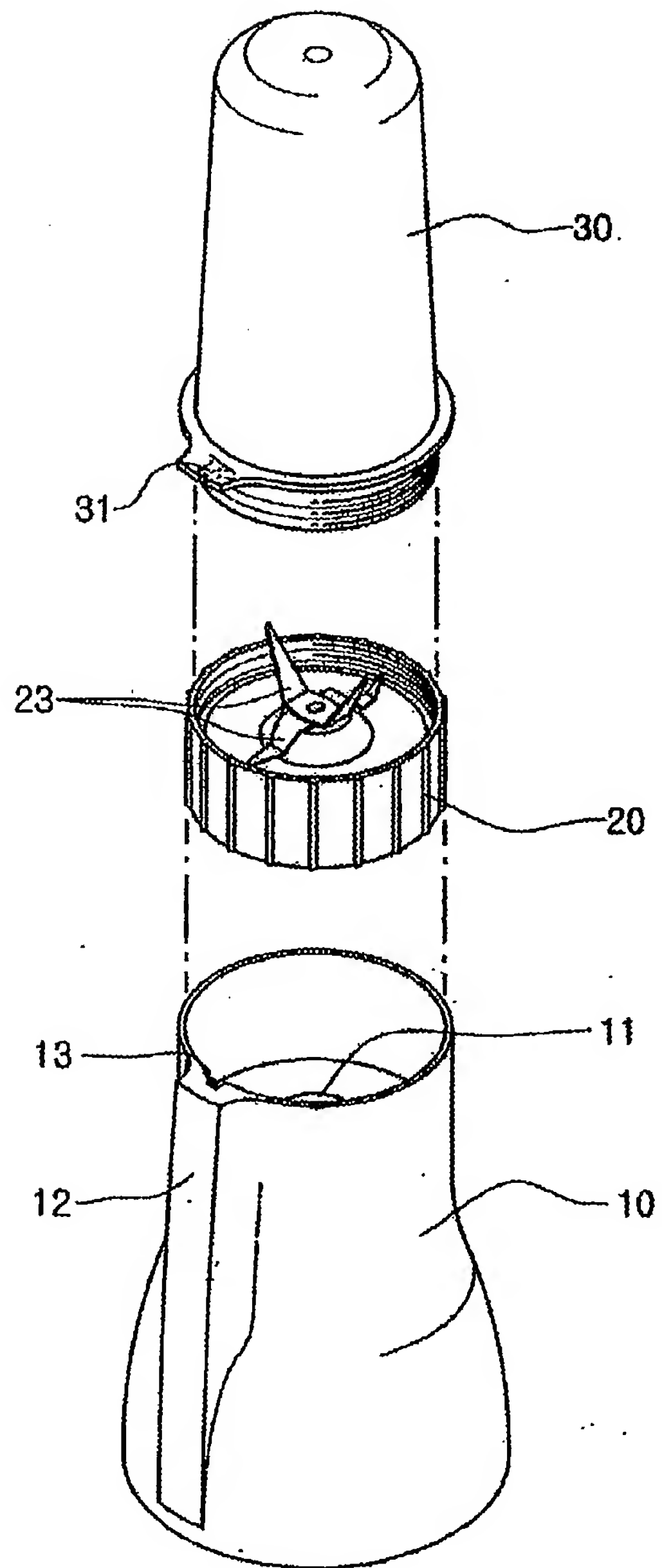
10 an attachment cap seated in the top of the main body, with a driven clutch rotatably provided at a center of a bottom of the attachment cap and having a shape corresponding to the drive clutch so as to engage with the drive clutch, a blade used for grinding or mixing food and mounted to an upper end of a rotating shaft extending upward from the driven clutch, and a heat-shielding plate mounted to the bottom of the attachment cap such that the driven clutch exposed to an outside of the heat-shielding plate, thus distributing heat, generated from the drive clutch, to the surroundings; and

15 a measuring cap engaging with the attachment cap through a screw-type engagement, with a locking structure provided at the measuring cap to lock the measuring cap to the main body so as to prevent the measuring cap from undesirably moving relative to the main body.

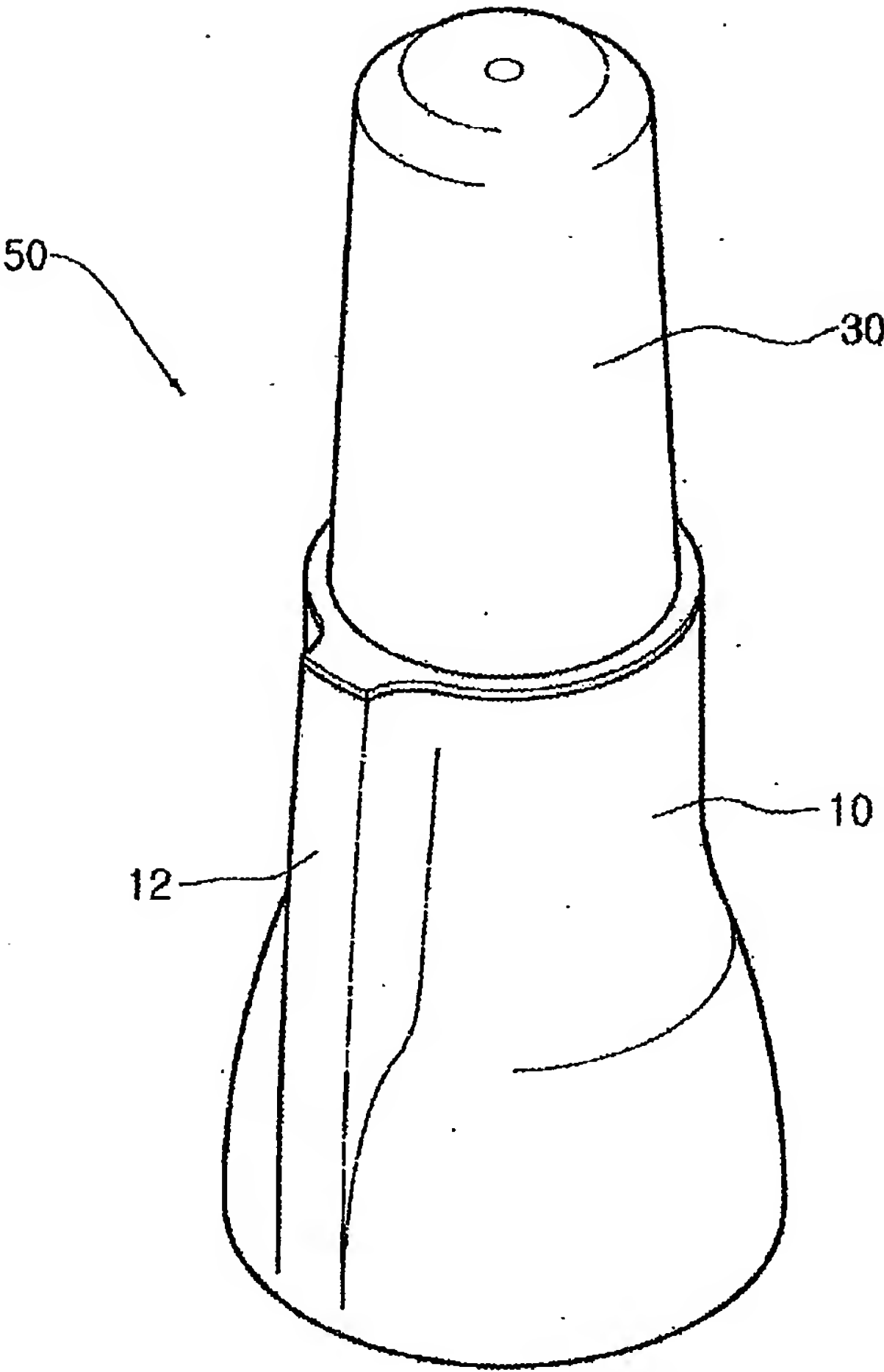
20 2. The mixer according to claim 1, wherein an outside edge of the drive clutch extends upward to a predetermined height, thus forming a guard wall to receive moisture and impurities therein.

【Drawing】

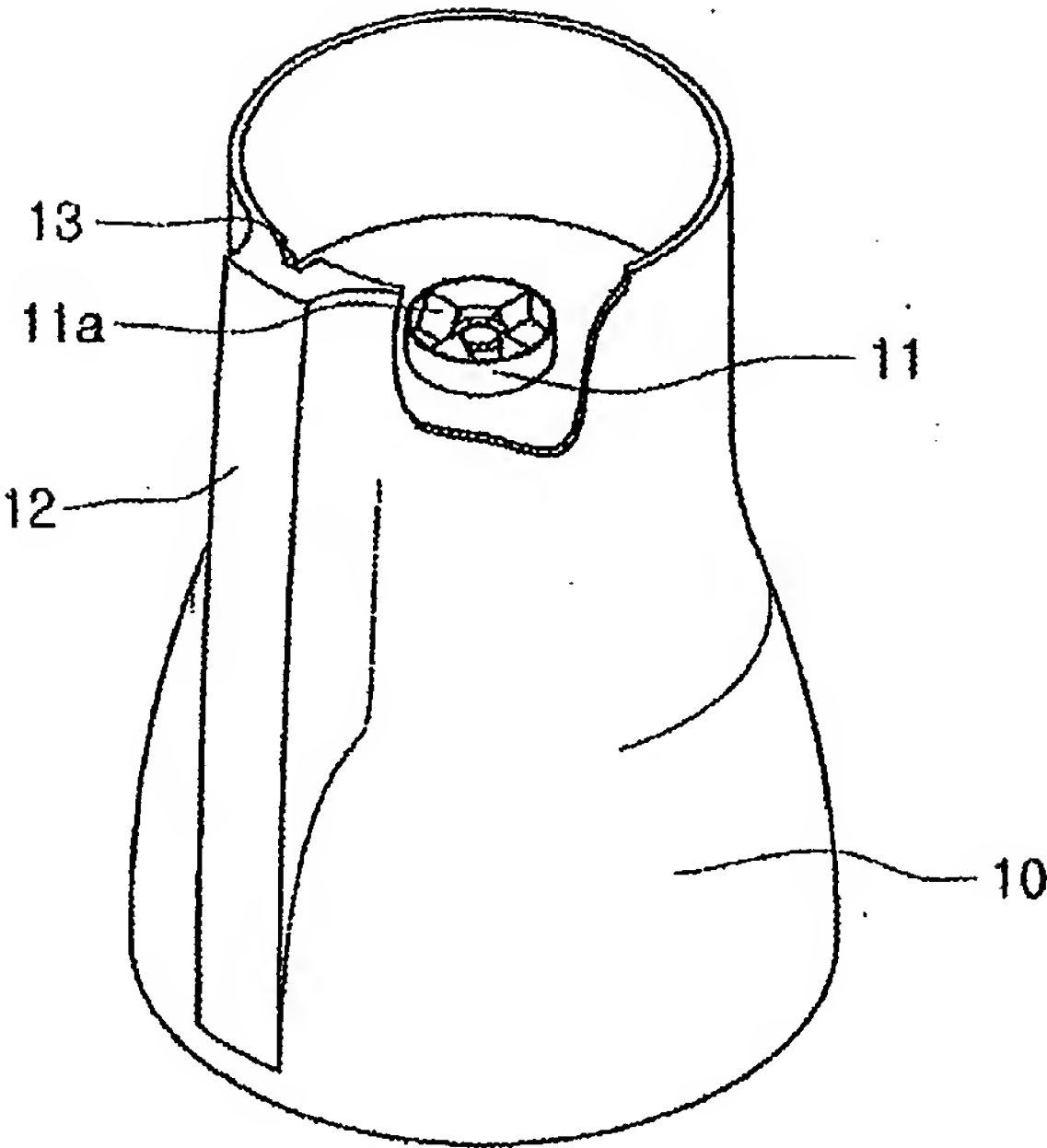
【FIG. 1】



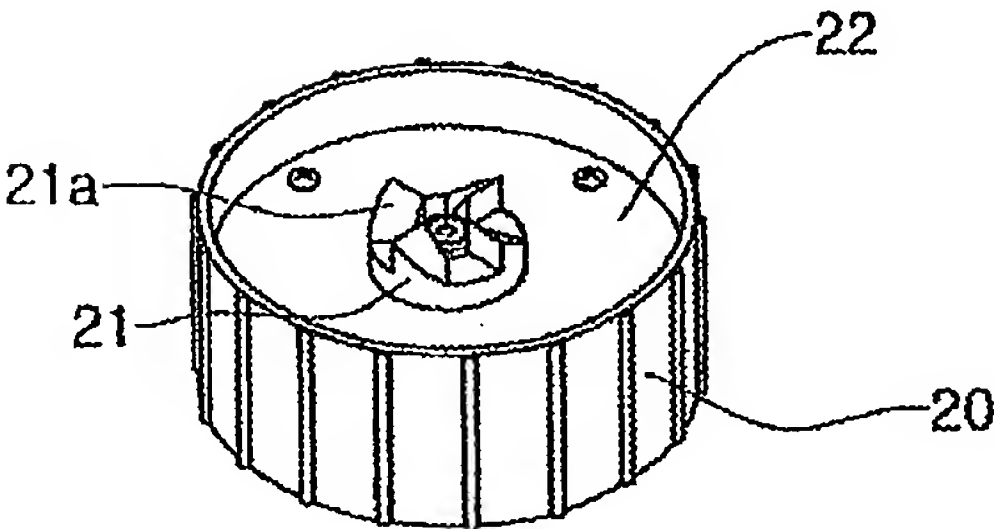
【FIG. 2】



【FIG. 3】

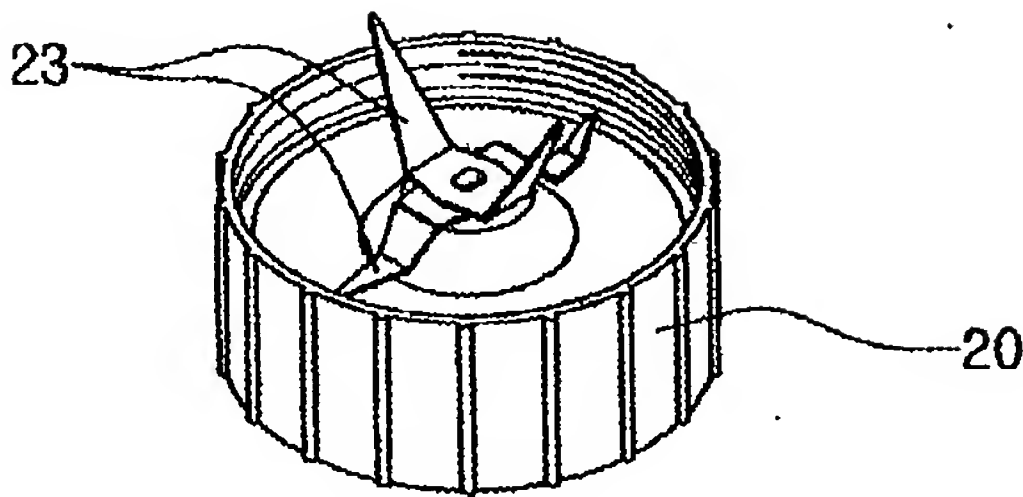


【FIG. 4】

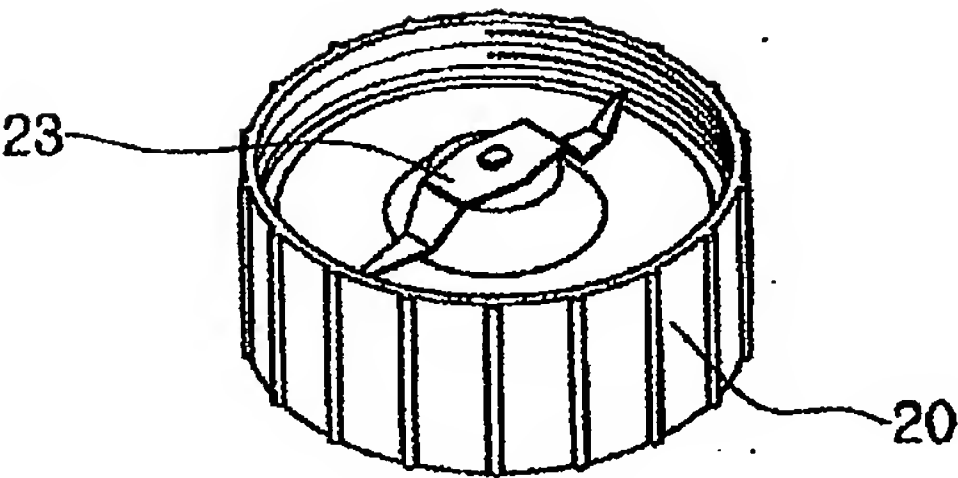




【FIG. 5a】



【FIG. 5b】



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR02/01597

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7 A47J 43/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 A47J 43/04, A47J 43/046

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Patents and applications for patents since 1975

Korean Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

KIPASS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 20-0212716 Y1(Shin, Dong-Cheon) 24 November 2000 See page 2, line 54 - page 4, line 8; figs. 2 - 4	1, 2
X	KR 1998-072112 A(Jewoo Electronics Inc.) 26 October 1998 See page 2, lines 33 - 56; figs. 1 - 3	1
Y	JP 59-22530 A(Matsushita Electric Ind. Inc.) 04 February 1984 See example; fig. 2	1
Y	US 5855431 A(Coastal Sales Associates, Inc.) 05 January 1999 See column 5, lines 13 - 40; column 9, lines 17 - 38; figs. 1, 2, 15	1
Y	KR 20-0209061 Y1(Lee, Chang-Hab) 20 October 2000 See page 2, line 21 - page 3, line 12; fig. 1	1, 2

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

27 DECEMBER 2002 (27.12.2002)

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Korean Intellectual Property Office  
920 Dunsan-dong, Seo-gu, Daejeon 302-701,  
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Authorized officer

KOO, Bon Kyoung

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International application No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 02-228920 A(Matsushita Electric Ind. Inc.) 11 September 1990 See the whole document	1, 2
A	US 5692830 A(Coastal Sales Associates, Inc.) 02 December 1997 See the whole document	1, 2

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Information on patent family members

International application No.

PCT/KR02/01597

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US 5692830 A	02-12-1997	None	